2016

GEORGIA ENERGY REPORT

TABLE OF CONTENTS

1 Gigawatt
GW
Solar PV

$77 Million of
Performance
Contracts

61 **NEW**
Electric Vehicle
Charging Stations

SINCE THE LAST WRITING OF THE GEORGIA ENERGY REPORT,

Georgia has continued on a path of significant growth and change in the energy sector. While energy production has surged in the U.S. and the prices of oil and natural gas have dropped, Georgia has significantly increased its energy efficiency and grown its renewable resources. By the end of 2016 Georgia will have more than 1 gigawatt (GW) of installed solar energy capacity, with little sign of the trend slowing down. In the past year, state agencies have contracted for $77 million worth of guaranteed energy savings performance contracts. Meanwhile, the Georgia Environmental Finance Authority (GEFA) helped fund 61 new electric vehicle charging stations at locations across the state. These are just some of the achievements in Georgia since the last Georgia Energy Report.

BY THE END OF 2016 GEORGIA WILL HAVE MORE THAN 1 GIGAWATT (GW) OF INSTALLED SOLAR ENERGY CAPACITY, WITH LITTLE SIGN OF THE TREND SLOWING DOWN.

The 2016 Georgia Energy Report discusses many of the energy-related trends across Georgia and the U.S. GEFA continues to lead in energy conservation, but many are doing their part to move Georgia to a cleaner and more efficient energy future. The 2016 Georgia Energy Report highlights the exciting changes and challenges that the energy sector faces, including renewable energy growth, changes in transportation technologies, federal carbon regulation, and the American energy production revival. The second section of the report explores the energy-related programs that GEFA is operating to improve and conserve Georgia's resources. Finally, the report contains an overview of Georgia's energy sector, including energy production and consumption statistics.

It's our hope that the 2016 Georgia Energy Report provides valuable insights into the rapidly changing sector that powers our lives and the economy.

RENEWABLE ENERGY

RENEWABLE ENERGY TAKES OFF IN GEORGIA//

GEORGIA IS AT THE FOREFRONT OF SOLAR GROWTH IN THE U.S., RANKING EIGHTH IN SOLAR INSTALLATIONS IN 2015, UP FROM 16TH IN 2014[1]. THE GEORGIA LEGISLATURE PASSED HB 57 — THE SOLAR POWER FREE-MARKET FINANCING ACT OF 2015 — THAT OPENS UP THE STATE TO SOLAR LEASING AND POWER-PURCHASE AGREEMENTS (PPAS), WHICH HELPS HOMEOWNERS ACCESS SOLAR POWER.

Solar growth in Georgia isn't limited to one or two organizations; it's happening across a wide range of utilities and consumer groups. Remarkably, the growth is occurring without the aid of a statewide mandate such as a renewable portfolio standard (RPS). Solar prices have dropped dramatically in recent years and Georgia benefits from having one of the highest solar resources in the country.

The cost of installed solar photovoltaic (PV) has dropped by nearly 50 percent since 2010. Georgia was not an early adopter of the technology, but the state has benefited from a wait-and-see approach while prices dropped. By the end of 2016, Georgia Power, the state's largest utility, expects to have approximately 1 GW of solar capacity in place[2]. Beyond Georgia Power, many of the state's electric co-ops and municipal utilities are developing solar projects. Green Power EMC, which supplies 38 co-ops in Georgia, expects to have more than 70 megawatts (MW) of solar capacity installed by the end of 2016. Individual co-ops and municipal utilities are also developing solar projects.

It isn't only solar energy taking hold in Georgia, but wind energy has also made an impact. While not traditionally seen as a wind power state, there has been recent movement to incorporate wind power into Georgia's generation mix and to evaluate future options. Based on average turbine heights and typically low wind speeds, Georgia does not have a significant amount of potential for wind with current technology. However, it is possible to bring in wind energy via the transmission network from windy areas of the Midwest and Great Plains.

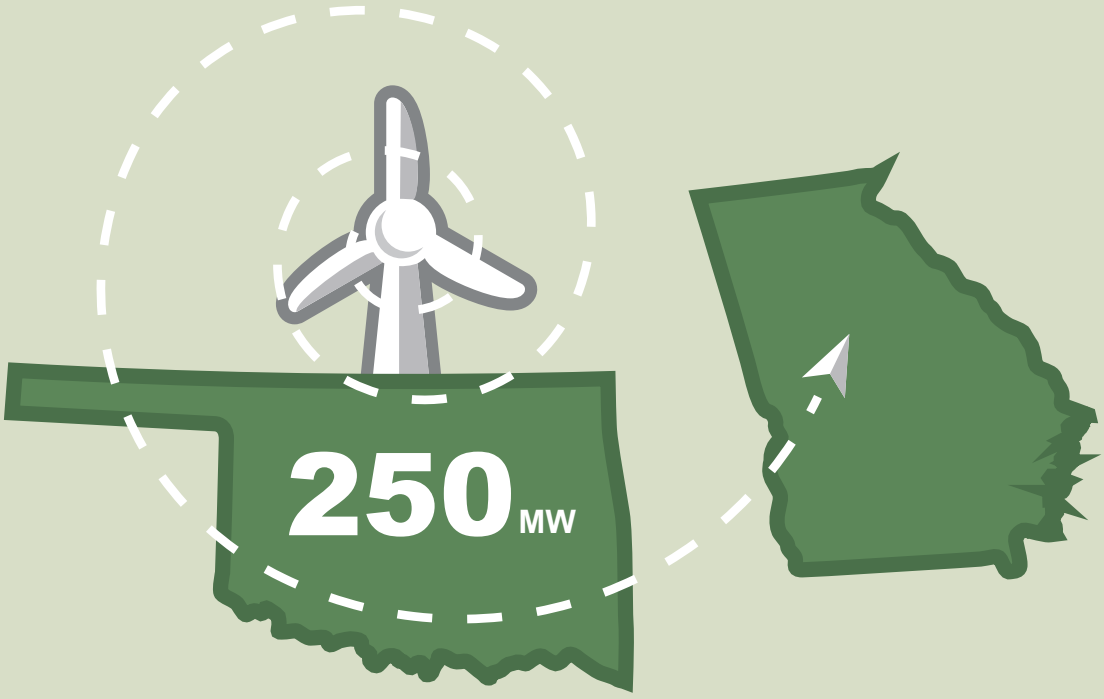
[1] **Source: GTM Research / SEIA U.S. Solar Market Insight report**

[2] **Georgia Power 2016 IRP filing**

AS A RESULT, ON JANUARY 1, 2016, GEORGIA POWER STARTED RECEIVING ENERGY FROM THE BLUE CANYON WIND FARM IN OKLAHOMA. GEORGIA POWER ENTERED INTO AN AGREEMENT FOR A 250 MW PPA FROM THE OKLAHOMA WIND FARM AT A VERY COMPETITIVE COST. ADDITIONALLY, GEORGIA POWER IS EVALUATING MORE OUT-OF-STATE WIND RESOURCES IN THE FUTURE.

A recent study suggests land-based wind may become more feasible in Georgia with the development of higher turbines. Heights at 110-140 meters could dramatically change the availability of wind energy in the state. The 2015 study, "The Wind Vision," by the U.S. Department of Energy (DOE), identifies the Southeast as a "new region" with improved potential based on new technological improvements.

Beyond land-based wind, there is also interest in developing offshore wind resources in the South Atlantic. The first offshore wind farm in the U.S., Block Island, is under construction off the coast of Rhode Island. It is expected to be complete later this year. While there are no projects under construction in the South Atlantic, there is growing interest and understanding of the potential resources in the region.



TRANSPORTATION

ENERGY CONSUMPTION IN THE TRANSPORTATION SECTOR//

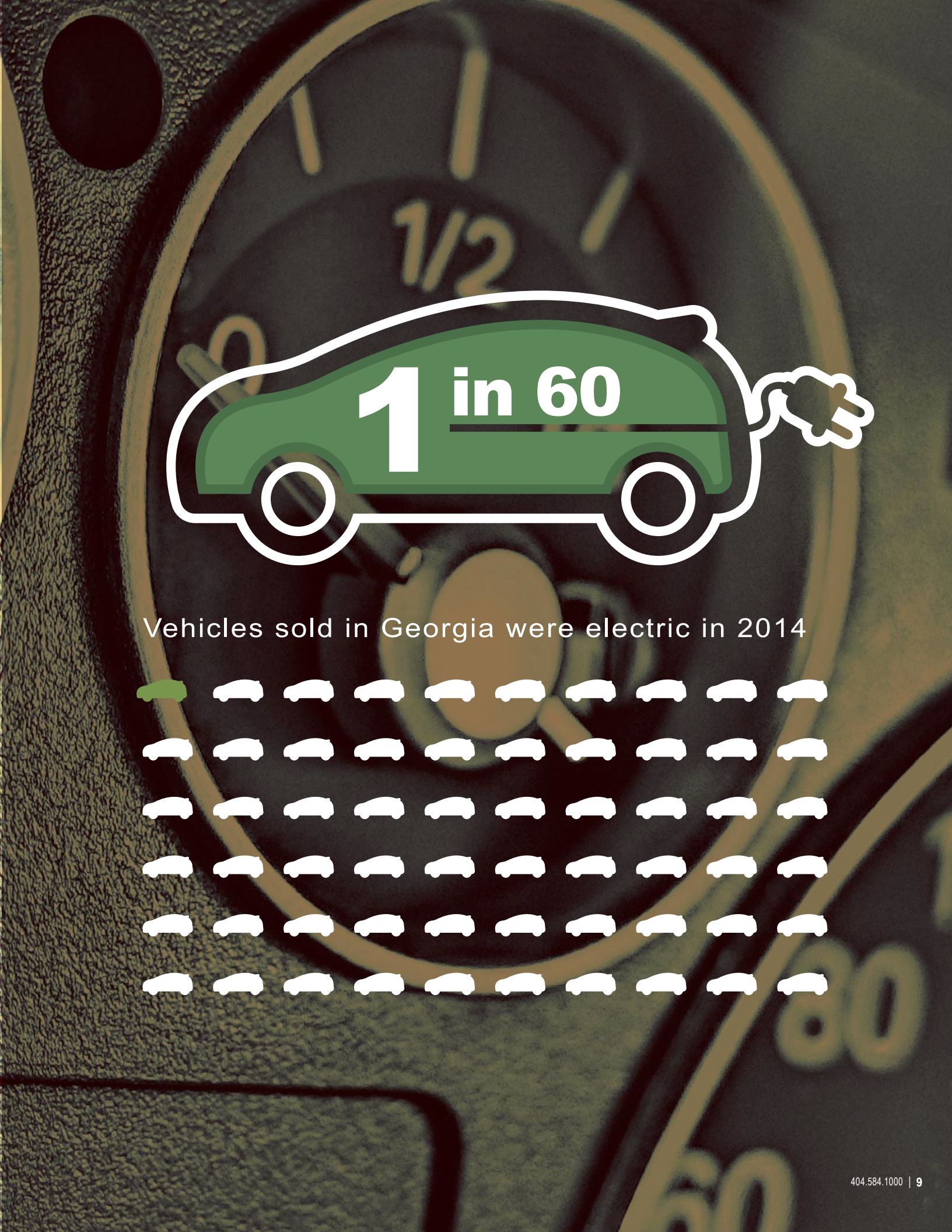
PETROLEUM DOMINATES THE TRANSPORTATION FUEL SECTOR IN AMERICA, BUT THERE ARE SIGNS THAT OIL DEPENDENCY IN THE U.S. TRANSPORTATION MARKET IS SHIFTING. IN 2014, THE SHARE OF ALTERNATIVE, NON-PETROLEUM FUELS USED IN TRANSPORTATION MORE THAN DOUBLED TO REACH 8.5 PERCENT — ITS HIGHEST LEVEL SINCE 1954[3].

Although conventional fuel prices are currently at their lowest point since 2008, the auto industry continues to innovate. Driven by increasingly stringent emissions standards, the federal Corporate Average Fuel Economy (CAFE) standard, and consumer demand, vehicles are becoming more fuel efficient and more alternative technologies, such as hybrids and electric vehicles, are becoming more commonplace. Energy consumption in the transportation sector in Georgia in 2013 was 15 percent below the peak in 2005. Some of the reduction is due to the most recent recession, but improved efficiency also played a role. Between 2007 and 2015, the average fuel economy of light-duty vehicles (cars, SUVs, vans, and pickup trucks) improved by nearly 5 miles per gallon[4].

Due to the Georgia Low Emission Vehicle (LEV) and Zero Emission Vehicle (ZEV) Certification Program tax credit, Georgia became a frontrunner in the electric vehicle (EV) marketplace. The program provided EV buyers with a $5,000 tax credit. EV owners also received as much as $2,500 for the cost of installing home car-charging equipment. Georgia car buyers pushed EV sales from less than one in 100 of new car sales to more than one in 60 in the first six months of 2014. However, in May 2015 Georgia House Bill 170 became law, which halted the tax credit and added a new $200 user fee for EV drivers to make up the potential revenue loss for drivers who switched from gasoline vehicles to EVs. Throughout 2014 and early 2015, an average of 1,000 EVs were registered monthly in Georgia. In September and October 2015, fewer than 100 new electric vehicles were registered.

[3] **Source: "Nonpetroleum share of transportation energy at highest level since 1954," U.S. Energy Information Administration, May 15, 2015,** www.eia.gov/todayinenergy/detail.cfm?id=21272

[4] **University of Michigan Transportation Research Institute** http://www.umich.edu/~umtriswt/EDI_sales-weighted-mpg.html


1 in 60
Vehicles sold in Georgia were electric in 2014

CLEAN POWER

Clean Power Plan (CPP)

At the federal and state level there have been numerous debates and proposals over the years to regulate greenhouse gas emissions, including carbon. On August 3, 2015, the U.S. Environmental Protection Agency (EPA), at the direction of President Obama, released the Clean Power Plan (CPP), also known as rule 111(d) of the Clean Air Act. The CPP proposes a complex methodology to regulate and limit the amount of carbon that can be emitted at the state level. States can meet the proposed carbon limits through a number of measures, including reducing coal consumption, switching to natural gas, increasing nuclear and renewable energy generation, and through energy efficiency. The CPP also allows the trading of carbon allowances between states.

At the request of the Georgia Environmental Protection Division (EPD), GEFA held regular meetings with EPD and the Georgia Public Service Commission (PSC) to develop a compliance plan for Georgia. Specifically, GEFA helped EPD better understand energy efficiency and how it could be leveraged to help Georgia meet the rule requirements. Energy efficiency is widely regarded as a lower cost method of reducing emissions, so it is important to any compliance plan. EPD arranged numerous stakeholder meetings to discuss the rule and held five public forums in which GEFA participated. Additionally, GEFA is actively involved in projects with DOE, the National Association of State Energy Officials (NASEO), and other states to develop systems that can track and validate energy-efficiency measures to be included in emissions regulations.

On February 9, 2016, the U.S. Supreme Court stayed the implementation of the CPP pending further judicial review. It is expected that the CPP will work its way to the Supreme Court, which may uphold, strike down, or modify the rule. Once the final decision is made, GEFA will continue working with EPD and other stakeholders to develop the best compliance plan for Georgia. Regardless of what happens with the CPP, GEFA's activities to encourage energy efficiency and to develop better tracking and verification programs for energy efficiency will benefit the state under other air emissions regulations that may occur in the future.

PERFORMANCE CONTRACTING

Guaranteed Energy Savings Performance Contracting (GESPC)

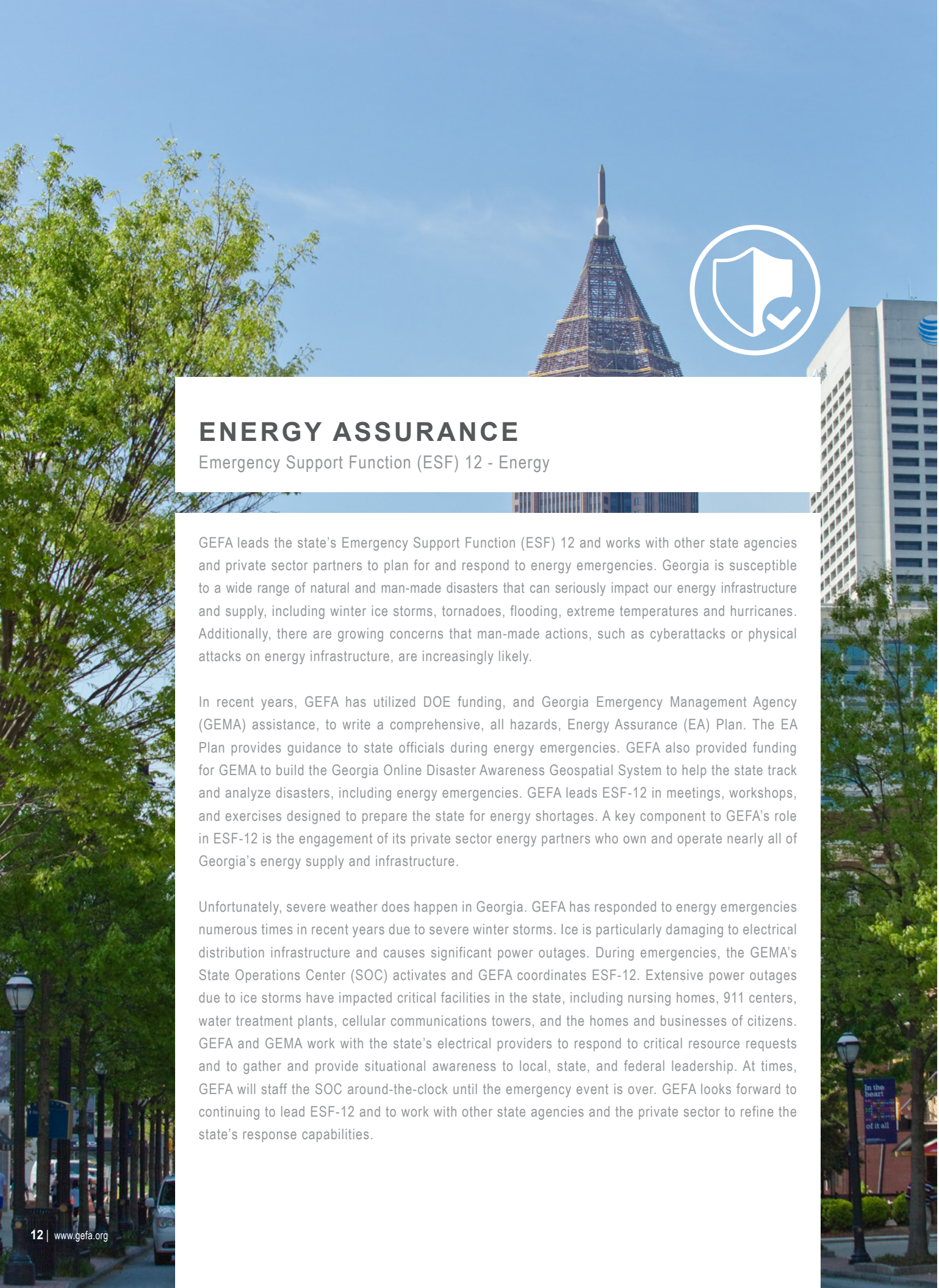
In 2010, Georgia voters approved guaranteed energy savings performance contracting for use by state agencies. Seven projects are under contract, which represents about $82 million in financed projects. In an energy performance contract, the energy services company (ESCO) guarantees the state will save an agreed-upon amount of money with the installation of energy- and water-efficient equipment and systems. Rather than having to appropriate the funds, the state uses the guaranteed savings to pay for the work over a period of years.

As part of the program development process, GEFA created a list of pre-qualified ESCOs that are allowed to enter into contracts with state agencies. GEFA also created a pre-qualified pool of lenders that provide financing to state agencies for energy performance contracts. Agencies are allowed to enter into energy performance contracts of up to 20 years. Each year the ESCO performs measurement and verification (M&V) to ensure that the project is meeting the guarantee. Energy performance contracts provide a proven, budget neutral way for agencies to fund much needed efficiency and operations improvements and, as a result, have become very popular across the country.

The first state agency energy performance contract in Georgia was Phillips State Prison in Buford, Ga. The project has finished construction and is in the second year of verified savings. In the first year, the project exceeded the guaranteed savings by more than 25 percent. Other energy performance contracts underway include:

- **The Georgia Institute of Technology**
- **The University of Georgia**
- **Georgia Department of Economic Development – Georgia World Congress Center Authority**
- **Georgia Department of Corrections**
- **Georgia Department of Natural Resources – North Georgia Mountains Authority**
- **Georgia Department of Transportation**

GEFA will continue to work with state agencies to implement energy performance contracts as an important method for saving energy and money while improving facilities.



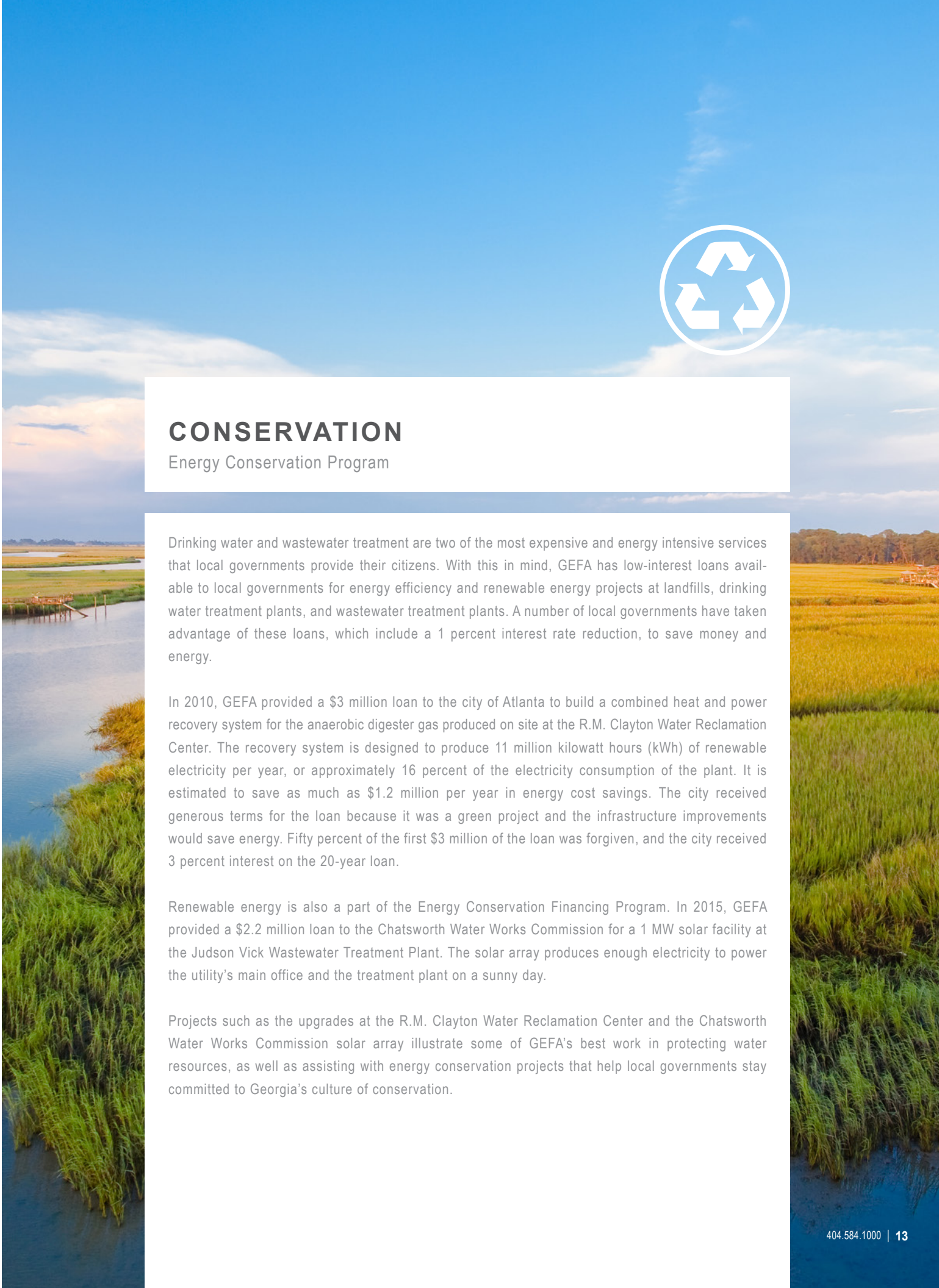
ENERGY ASSURANCE

Emergency Support Function (ESF) 12 - Energy

GEFA leads the state's Emergency Support Function (ESF) 12 and works with other state agencies and private sector partners to plan for and respond to energy emergencies. Georgia is susceptible to a wide range of natural and man-made disasters that can seriously impact our energy infrastructure and supply, including winter ice storms, tornadoes, flooding, extreme temperatures and hurricanes. Additionally, there are growing concerns that man-made actions, such as cyberattacks or physical attacks on energy infrastructure, are increasingly likely.

In recent years, GEFA has utilized DOE funding, and Georgia Emergency Management Agency (GEMA) assistance, to write a comprehensive, all hazards, Energy Assurance (EA) Plan. The EA Plan provides guidance to state officials during energy emergencies. GEFA also provided funding for GEMA to build the Georgia Online Disaster Awareness Geospatial System to help the state track and analyze disasters, including energy emergencies. GEFA leads ESF-12 in meetings, workshops, and exercises designed to prepare the state for energy shortages. A key component to GEFA's role in ESF-12 is the engagement of its private sector energy partners who own and operate nearly all of Georgia's energy supply and infrastructure.

Unfortunately, severe weather does happen in Georgia. GEFA has responded to energy emergencies numerous times in recent years due to severe winter storms. Ice is particularly damaging to electrical distribution infrastructure and causes significant power outages. During emergencies, the GEMA's State Operations Center (SOC) activates and GEFA coordinates ESF-12. Extensive power outages due to ice storms have impacted critical facilities in the state, including nursing homes, 911 centers, water treatment plants, cellular communications towers, and the homes and businesses of citizens. GEFA and GEMA work with the state's electrical providers to respond to critical resource requests and to gather and provide situational awareness to local, state, and federal leadership. At times, GEFA will staff the SOC around-the-clock until the emergency event is over. GEFA looks forward to continuing to lead ESF-12 and to work with other state agencies and the private sector to refine the state's response capabilities.



CONSERVATION

Energy Conservation Program

Drinking water and wastewater treatment are two of the most expensive and energy intensive services that local governments provide their citizens. With this in mind, GEFA has low-interest loans available to local governments for energy efficiency and renewable energy projects at landfills, drinking water treatment plants, and wastewater treatment plants. A number of local governments have taken advantage of these loans, which include a 1 percent interest rate reduction, to save money and energy.

In 2010, GEFA provided a $3 million loan to the city of Atlanta to build a combined heat and power recovery system for the anaerobic digester gas produced on site at the R.M. Clayton Water Reclamation Center. The recovery system is designed to produce 11 million kilowatt hours (kWh) of renewable electricity per year, or approximately 16 percent of the electricity consumption of the plant. It is estimated to save as much as $1.2 million per year in energy cost savings. The city received generous terms for the loan because it was a green project and the infrastructure improvements would save energy. Fifty percent of the first $3 million of the loan was forgiven, and the city received 3 percent interest on the 20-year loan.

Renewable energy is also a part of the Energy Conservation Financing Program. In 2015, GEFA provided a $2.2 million loan to the Chatsworth Water Works Commission for a 1 MW solar facility at the Judson Vick Wastewater Treatment Plant. The solar array produces enough electricity to power the utility's main office and the treatment plant on a sunny day.

Projects such as the upgrades at the R.M. Clayton Water Reclamation Center and the Chatsworth Water Works Commission solar array illustrate some of GEFA's best work in protecting water resources, as well as assisting with energy conservation projects that help local governments stay committed to Georgia's culture of conservation.

FUEL STORAGE

The Fuel Storage Tank Program (FSTP)

The Fuel Storage Tank Program (FSTP) is responsible for upgrading, replacing, or closing all state-owned fuel storage tanks. The FSTP serves as the centralized management and monitoring office for fuel storage tanks owned by state agencies and institutions throughout Georgia.

Malfunctioning fuel storage tanks pose a significant danger to the state's land and water resources. It's important to ensure that the tanks are working properly, and facility staff and fuel delivery companies are taking proper precautions. There are more than 300 underground storage tanks (USTs) at more than 200 state-owned sites. EPD requires that facilities adhere to certain rules, regulations and compliance issues. If violations are noted during EPD inspections, penalties can be assessed, including fines and facility shutdowns. All USTs at state facilities are inspected by EPD every three years.

In preparation for visiting a state facility, FSTP staff review information such as fuel levels and temperatures provided by the tank monitoring system. During site visits, the fuel tanks and equipment are inspected for any needed repairs or possible tampering. Dispensers are examined and checked for leaks or malfunctioning pipes and equipment. FSTP staff inspect the leak detection system and sensors in the tank sump and check the sump walls and spill bucket for cracks.

The FSTP staff can perform small repairs such as removing water from tank sumps, clearing of alarms and adjusting sensors, which can save hundreds of dollars. Before leaving a site, the FSTP staff identify the steps needed to ensure the deficiencies are corrected and the facility remains in compliance.

The FSTP was established in 1995, in response to federal construction and maintenance standards for fuel storage tanks and serves as the central management office for state agencies and institutions owning fuel storage tanks. The FSTP's role was expanded in 2004 to include operation oversight and maintenance of all state-owned above ground storage tanks and USTs.

WEATHERIZATION

The Weatherization Assistance Program (WAP)

The Weatherization Assistance Program (WAP) works with low-income households to reduce energy costs by providing free home energy efficiency testing and solutions.

WAP uses Whole House Weatherization, which treats the house as a single energy-consuming system rather than a loose collection of unrelated pieces of equipment. It requires advanced diagnostic skills and cost-effective measure selection and installation. These efficiency measures result in significant energy and cost savings in excess of 20 percent. Single-family homes, multifamily buildings and mobile homes are eligible.

In FY 2015, WAP weatherized 1,759 homes, which amounts to annual energy savings of 53,649 MBTUs.

BUILDING OPERATION PRACTICES

Building Operator Certification® (BOC)

Building Operator Certification® (BOC) is the industry-recognized credential in energy efficient building operation practices developed by the Northwest Energy Efficiency Council. BOC promotes energy efficiency by training facilities personnel in making heating, ventilation, air conditioning, electric, and lighting systems more energy efficient.

Through a training partnership with Gwinnett Technical College, GEFA's BOC scholarship program provides training for K-12 and higher education building operators, maintenance staff, and facilities personnel to efficiently operate and maintain their facilities.

GEFA covers most of the tuition ($1,500), and in turn requires participants to complete eight Level 1 BOC courses, hands-on project assignments, and exams. Scholarship recipients provide baseline utility data from one school in their district (providing 12 months of utility data preceding the training and 12 months of utility data post training). This allows GEFA to track energy savings and request additional federal funding for future classes.

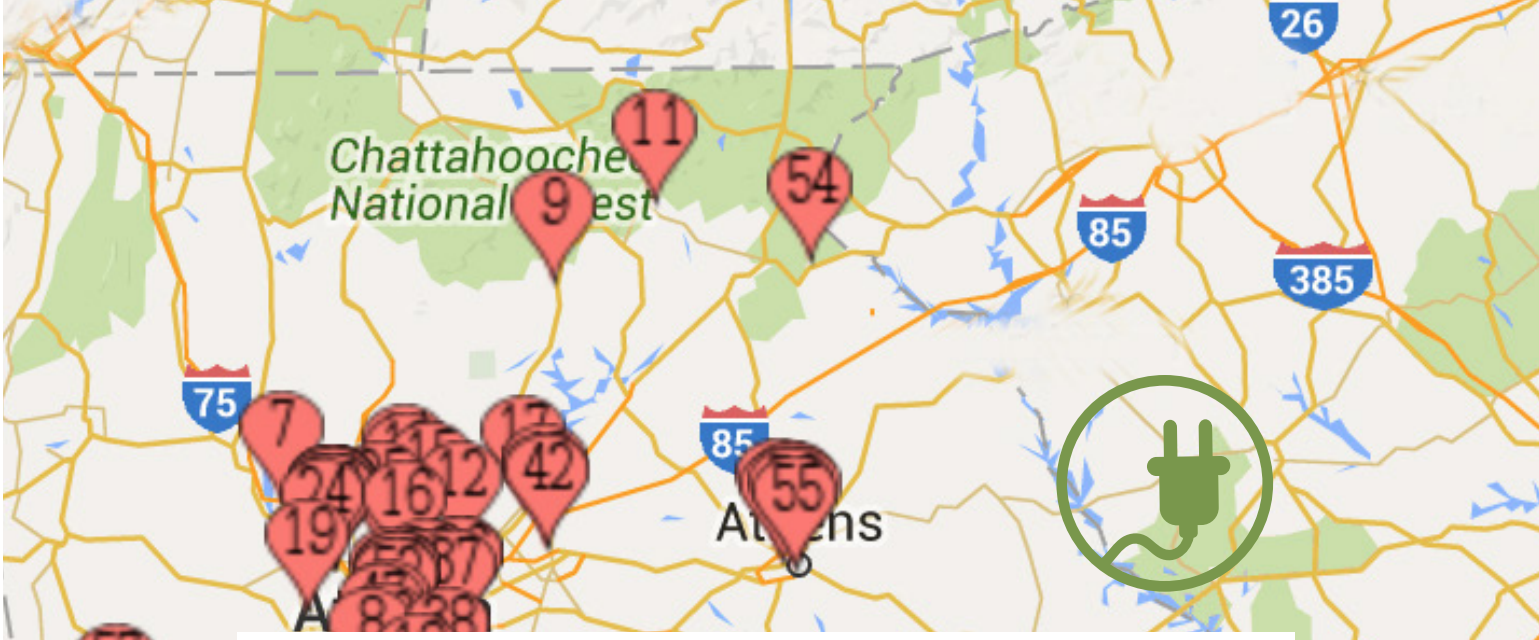
Additionally, GEFA requires the development of an Energy Action Plan by each participant. Participants present to their facility supervisors and management team the last day of class.

RESULTS FROM THE 2013 BOC SCHOLARSHIP CLASS:

- **11 K-12 school systems participated in 2013**
- **Those schools combined saved a total of 1,119,495 in kWh, and 3,148 therms (4,131 Mmbtu) in the first year post training.**
- **Estimated total savings of $124,844 in the first year**
- **Average savings of $8,322 per school**

testimonial

The BOC Program provides the knowledge needed to maximize the operational efficiency of any facility. The classes are structured so that any skill level or expertise will come away with a better understanding of facility components and systems. You gain so much knowledge/understanding in a short amount of time – knowledge and understanding that you can use to sustain a high level of energy savings without sacrificing occupant comfort. Through the use of an "Energy Action Plan," you continue to improve your facilities long after the course is complete. The BOC classes are an invaluable tool as we work to sustain high performing facilities. – Bari Ibele, GWINNETT COUNTY PUBLIC SCHOOLS



CHARGING STATIONS

The Charge Georgia program

The Charge Georgia program was designed to increase the availability of public EV charging stations throughout Georgia. The program, which began in October 2014, provided colleges, universities, state agencies, cities and counties with a rebate to install electric vehicle charging stations at campuses and facilities. The maximum rebate per organization was $40,000, with colleges and universities with multiple campuses allowed a maximum rebate of $40,000 per campus. The rebates reimbursed 50 percent of actual or proposed costs, whichever was lower, to support the planning, design, permitting, equipment, delivery, installation, inspection, and signage. As part of the rebate agreement, recipients are required to provide semiannual data from the charging stations to GEFA for a period of the three years.

As of April 30, 2016, the program provided rebates supporting 57 AC Level II and 4 direct current quick charging (DCQC) EV charging stations, with rebates totaling $371,904.

The list of locations that have been awarded rebates include:

- Atlanta Metropolitan State College
- Cobb County
- Georgia Gwinnett College
- City of Helen
- Athens-Clarke County
- Clayton State University
- Georgia Tech
- University of West Georgia
- City of Acworth
- DeKalb County
- Georgia State University
- City of Peachtree Corners
- City of Sandy Springs
- City of Columbus
- UGA
- City of Newnan
- City of College Park
- Fayette County
- City of Dahlonega
- City of Roswell
- City of Suwanee
- Emory University
- Augusta University

testimonial

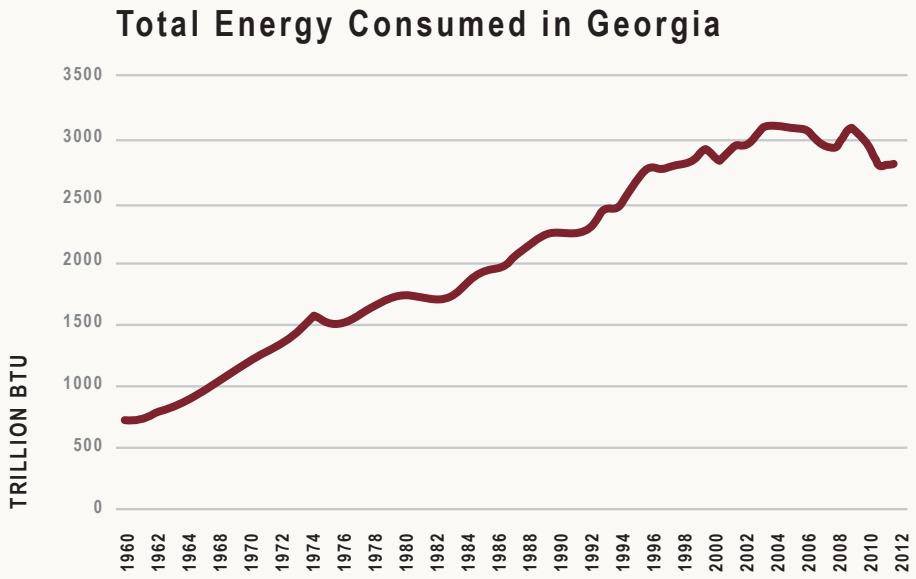
"Little steps add up when it comes to protecting our environment. And providing this resource at Hammond Park not only gave motorists a central location where they could charge up their vehicles; it also provided a setting, one of our great parks, where the individual can recharge as well," – Rusty Paul, SANDY SPRINGS MAYOR

ENERGY CONSUMPTION

IN GEORGIA //

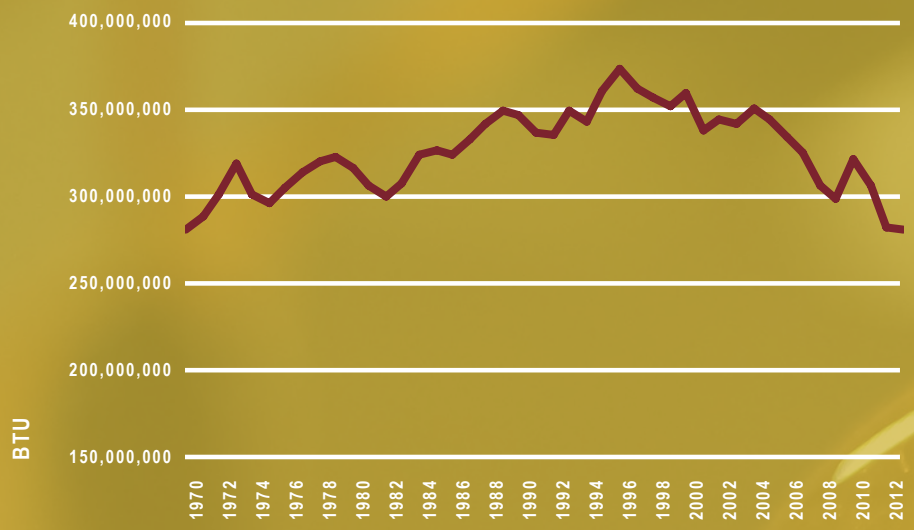
GEORGIA'S ENERGY CONSUMPTION PER CAPITA STARTED TO DROP IN 1997, AFTER YEARS OF INCREASES, SIGNIFYING THAT DESPITE INCREASED POPULATION AND ECONOMIC GROWTH, GEORGIA WAS BECOMING MORE ENERGY EFFICIENT. IN FACT, THE AMOUNT OF BTUS CONSUMED PER PERSON IN GEORGIA DROPPED 24 PERCENT BETWEEN 1996 AND 2013.

The drop in energy consumption per capita can be attributed to many things, such as technology improvements in transportation, more stringent energy codes for residential and commercial buildings, and citizen's and business's increased awareness of environmental issues. Another indicator of the state's increased efficiency is BTUs consumed per dollar of gross domestic product (GDP). Georgia's economy in 2013 used 24 percent less energy per dollar of GDP than in 1997[5].

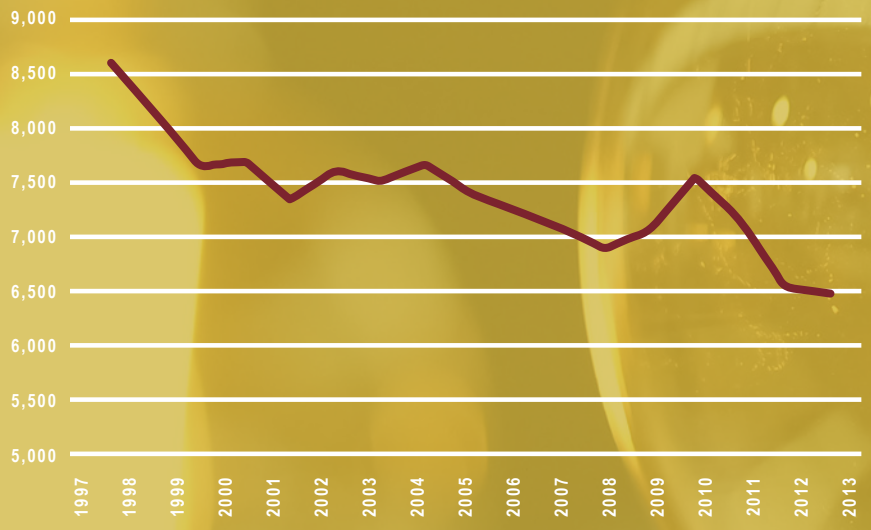


[5] The energy statistics cited in this section come from the U.S. Energy Information Administration. The most recent data available ranges from 2013 to 2015.

Energy Consumption per Capita

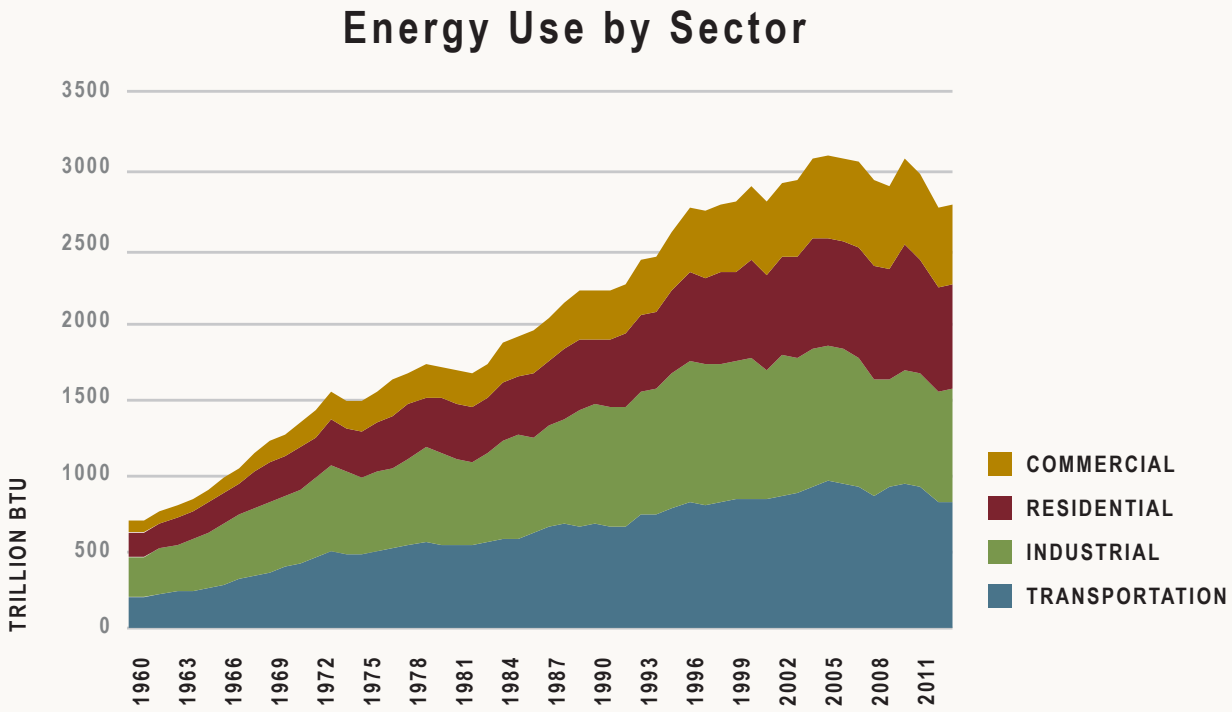


Economic Energy Intensity, BTU per Dollar of GDP

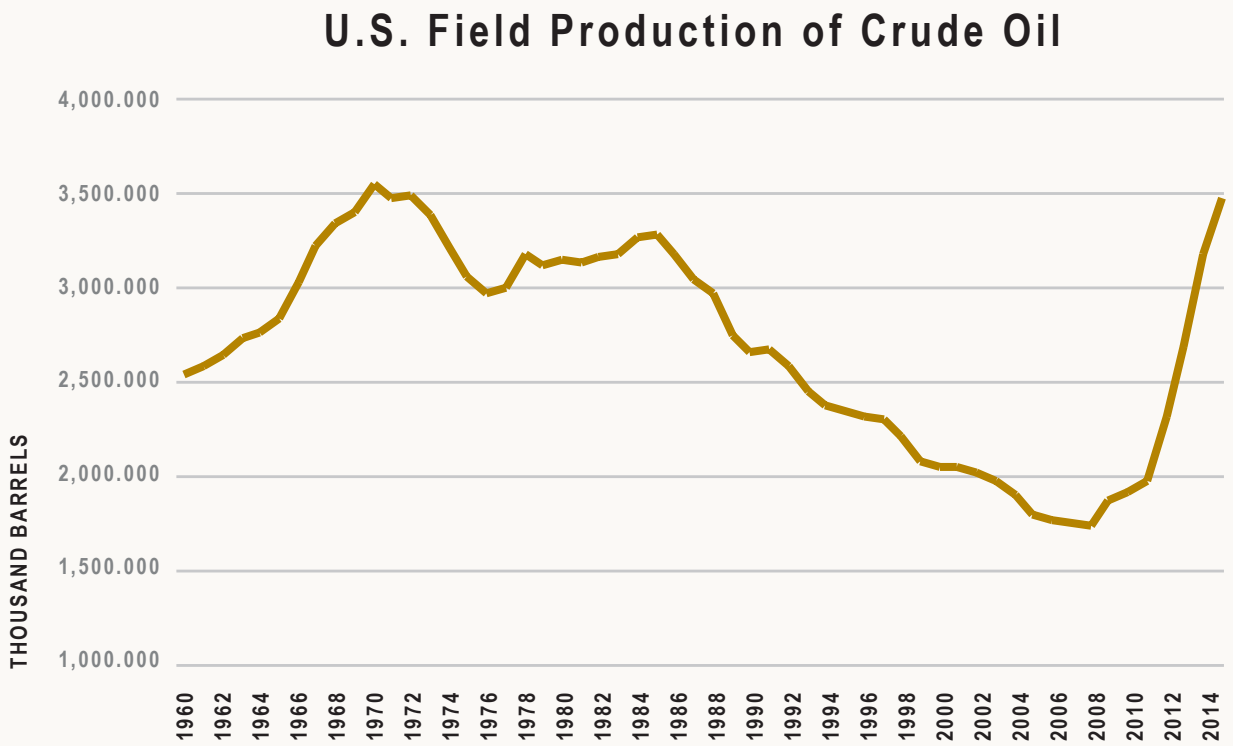


ENERGY BY SECTOR

NOT COUNTING THE ELECTRIC POWER SECTOR[6], THE TRANSPORTATION SECTOR IS THE LARGEST CONSUMER IN THE STATE. THE TRANSPORTATION SECTOR PASSED THE INDUSTRIAL SECTOR AS THE LARGEST CONSUMER IN 2004. THIS CHANGE CAN BE EXPLAINED BY A FEW THINGS, INCLUDING THE DECLINE OF MANUFACTURING IN THE U.S., CHANGING COMMUTING PATTERNS, AND GEORGIA'S GROWTH AS A LOGISTICS HUB. INDUSTRIAL, RESIDENTIAL, AND COMMERCIAL, IN THAT ORDER, ARE THE NEXT LARGEST CONSUMERS OF ENERGY AFTER THE TRANSPORTATION SECTOR.



[6] The electric power sector in Georgia is the number one consumer of energy. However, the energy consumed by the electric power sector in Georgia is not included in the above graph. This is because energy consumed by the electric power sector includes energy used for the generation and delivery of electricity to the point of use plus the energy consumed by the electric power sector itself.



PETROLEUM

Georgia, especially Metro Atlanta, is a major consumer of petroleum and is completely dependent upon oil and petroleum products drilled and refined in other states and countries. The majority of petroleum for Metro Atlanta and North Georgia enters the state via two pipelines from the Gulf Coast. Petroleum also comes in through the ports of Savannah, Ga. and Brunswick, Ga. Due to reliance on pipelines, Georgia is extremely vulnerable to supply interruptions from weather and human interference. In 2013, Georgia consumed approximately 7.3 billion gallons of petroleum products, of which approximately 4.8 billion gallons were motor gasoline. Motor gasoline consumption in Georgia peaked in 2005, and is down 5.6 percent since 2005.

Crude oil production in the U.S. has surged since reaching a low point in 2008. Most of the increase since 2008 has come from tight oil plays in places like North Dakota and Texas where hydraulic fracturing and horizontal drilling are being used to produce oil from shale formations. Similar to natural gas, improved hydraulic fracturing techniques and high oil prices allowed significantly more oil to flow from tight shale formations than in the past. U.S. oil production increased by 88 percent from 2008 to 2015. During the same 2008 to 2015 period, the West Texas Intermediate (WTI) spot price of a barrel of oil dropped by 51 percent.

COAL

The amount of coal consumed in Georgia decreased in recent years. However, it's still a major source of energy for electric power generation. In 2013, Georgia consumed 21,370,000 short tons of coal, which is equal to about 185,826 railroad cars, which would stretch for more than 1,700 miles. The vast majority of this coal was consumed in the electric generation sector.

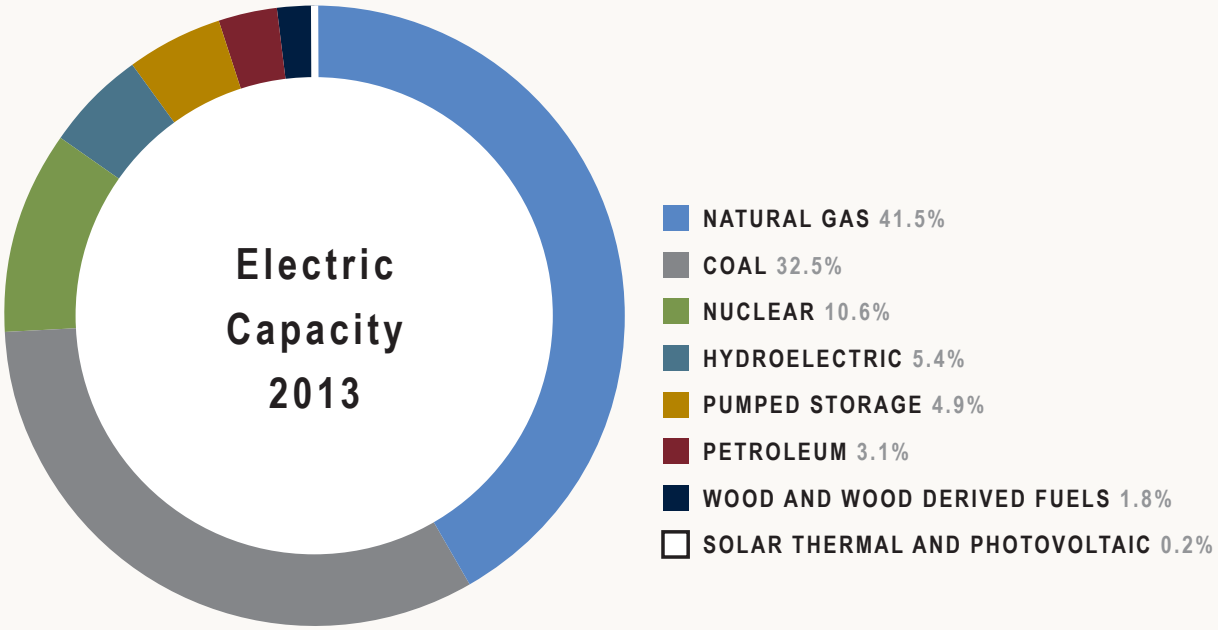
Like petroleum, Georgia imports all of its coal. Georgia's coal supply mostly comes from Kentucky and Wyoming. In 2013, Wyoming was the leading supplier of coal to Georgia. Nearly all coal arrives in Georgia via railroad. Demand for subbituminous Wyoming coal has increased because the delivered cost is typically lower than that of bituminous coal from Kentucky. Subbituminous Wyoming coal is also lower in ash and sulfur, which helps it meet some EPA requirements. However, Wyoming coal is less energy dense than coal from Kentucky, which requires burning more to produce the same amount of energy. This means future environmental regulations could change the mix required by utilities in Georgia.

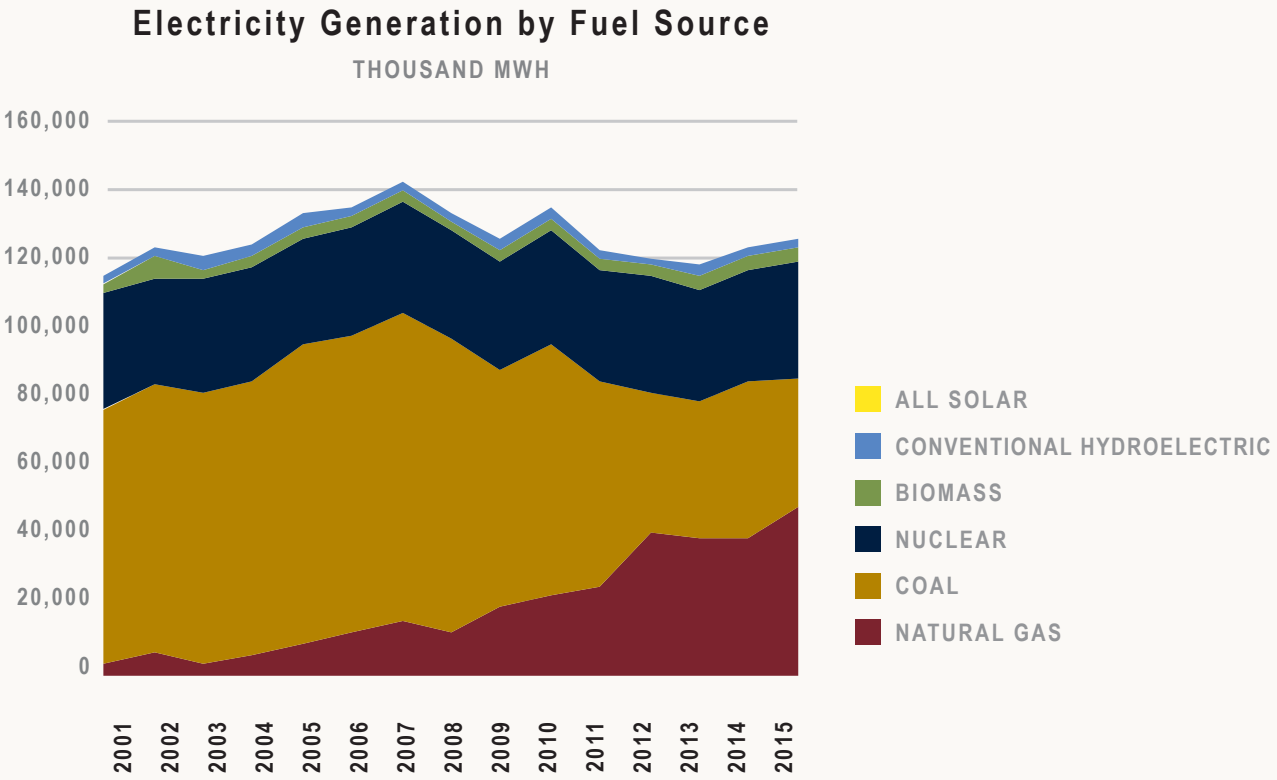
NATURAL GAS

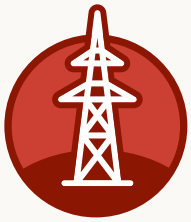
The natural gas market has changed dramatically in recent years. Technological improvements, such as hydraulic fracturing, have enabled the U.S. to produce significantly more natural gas. This has resulted in lower natural gas prices in Georgia. In 2015, the U.S. produced an average of 78.9 billion cubic feet per day (Bcf/d) and consumed an average of 75.3 Bcf/d, therefore producing nearly all of the natural gas consumed in the country. Because natural gas is not as easily or affordably imported or exported as petroleum products, the U.S. readily benefits from the increasing supply.

In 2014, Georgia used 652,230 million cubic feet (MMcf) of natural gas. Approximately 44 percent of the total amount of natural gas was consumed by the electric power generation sector. This amount represents dramatic growth. In 1997, just 4.6 percent of the natural gas consumed in Georgia was utilized by the electric power generation sector.

Similar to petroleum, Georgia has no reserves of natural gas and is dependent on interstate pipelines for natural gas delivery. Georgia also has access to liquefied natural gas (LNG) imports through the Elba Island Terminal near Savannah, Ga. However, due to the current supply of natural gas in the U.S., there are plans to turn a number of LNG import facilities, including Elba Island, into LNG export facilities. The Elba Island LNG exporting project is currently working its way through the federal permitting process.


Electric
Capacity
2013
NATURAL GAS 41.5%
COAL 32.5%
NUCLEAR 10.6%
HYDROELECTRIC 5.4%
PUMPED STORAGE 4.9%
PETROLEUM 3.1%
WOOD AND WOOD DERIVED FUELS 1.8%
SOLAR THERMAL AND PHOTOVOLTAIC 0.2%


Electricity Generation by Fuel Source
THOUSAND MWH
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
ALL SOLAR
CONVENTIONAL HYDROELECTRIC
BIOMASS
NUCLEAR
COAL
NATURAL GAS



ELECTRICITY

One of the most significant developments in Georgia's electricity market recently is the growing importance of natural gas to the state's electric generation mix. In 2015, 39 percent of Georgia's electricity was generated by natural gas, compared to just 3 percent in 2001. Natural gas is now a significant player in the market because dramatically increasing supplies in the U.S. have lowered the price significantly, and pollution regulations have pressured utilities into switching from coal to natural gas. While less electricity is generated from coal than in the past, it still remains a large and important source of electricity. In 2015, 29 percent of the state's electricity was generated by coal. Approximately 26 percent was generated by nuclear in 2015, with most of the remaining generation made up of hydroelectric, biomass, and other renewables.

The fuel type used to generate electricity depends on many factors, including demand, time of day, time of year and the weather. Electric providers must be ready to meet the demands of their customers at all times of the day, despite storage challenges. Electricity generation is usually divided into three categories: baseload (run around-the-clock), intermediate (usually run from mid-morning until the evening), and peak load (run when demand is highest – usually in the afternoon and early evening).

Each fuel type used to generate electricity has specific operating and cost characteristics. Baseload demand is usually satisfied by nuclear and coal generators (due to their low variable costs and limited operational flexibility – i.e., it takes time for the generators to warm up), biomass, and some hydroelectric generation (due to low variable costs). Intermediate loads are often satisfied by gas and oil steam turbines, combined cycle gas turbines, and hydroelectric power. Peak loads are usually satisfied by single-cycle gas turbines, hydroelectric power, pumped hydroelectric power, and wind- and solar-generating units.

PIPELINES AND GEORGIA

Georgia relies on imported refined petroleum products to meet its demand. Most refined petroleum imports come to the state via two interstate pipelines: Colonial Pipeline and Plantation Pipeline. The Colonial Pipeline system spans 3,500 miles with 5,100 miles of pipe (some of the right away contains more than one line) from Texas to New Jersey. Colonial provides refined petroleum products to Alabama, Delaware, Georgia, Louisiana, Maryland, Mississippi, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, Tennessee, and Virginia.

The Plantation Pipeline system receives petroleum products from nine refineries in Mississippi and Louisiana. It delivers those products to 130 shipper terminals in eight states through a 3,100 mile network of pipeline. The states served by the Plantation Pipeline include Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

The supply of transportation fuels and other refined petroleum products involves the supply of crude oil through the global oil market and the capacity to refine crude oil into fuels. While refineries are spread throughout the U.S., the greatest concentration of refining capacity is located along the Gulf Coast in Louisiana, Mississippi and Texas. Georgia relies almost entirely on the refining capacity in the Gulf Coast.

Georgia's petroleum industry includes major companies that import fuel and wholesale and retail distributors, including service stations and fuel oil and propane distributors. While the bulk of oil products come to the state via the Colonial and Plantation Pipelines, propane is received via the Dixie Pipeline. Some product is also imported by tanker and off-loaded at ports in Brunswick and Savannah. Petroleum products delivered to Georgia are usually received at terminals and trucked to local distribution points.

Natural gas imports into Georgia arrive via three interstate pipelines and a liquefied natural gas (LNG) import terminal (Elba Island Terminal) at Elba Island, near Savannah, Ga. Three companies operate the interstate pipelines that deliver natural gas to Georgia — Williams Companies Inc. (which owns the Transco Pipeline), Spectra Energy (East Tennessee Natural Gas pipelines) and Kinder Morgan (Southern Natural Gas pipeline system). The Transco pipeline is the second largest natural gas pipeline system in the nation, consisting of 10,200 miles of pipeline extending from south Texas to New York City. The East Tennessee Natural Gas pipeline system is 1,525 miles long, beginning in Tennessee and extending to just south of Roanoke, Va. The Southern Natural Gas pipeline system is made up of approximately 7,600 miles of pipeline extending from Gulf Coast locations in Texas and Louisiana to seven southeastern states. SNG is the major supplier of natural gas to Atlanta Gas Light (AGL) Company.

Even though Georgia has no underground natural gas storage, AGL owns and operates three LNG peak-shaving facilities in Georgia. AGL's largest facility is the Riverdale LNG plant, which has a storage capacity of 2.56 Bcf and is connected to two interstate pipelines for supply. AGL's Cherokee LNG plant, located in Ball Ground, Ga., has approximately 2 Bcf in storage capacity and receives gas from three pipelines. Like the Riverdale plant, the Cherokee plant also serves the Atlanta market. AGL's Macon, Ga., LNG plant has a storage capacity of almost 1.5 Bcf.

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